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XXIV¹

**EXPEDITION OF THE CALIFORNIA ACADEMY
OF SCIENCES TO THE GULF OF
CALIFORNIA IN 1921²**

CRUSTACEA (Marcrura and Anomura)

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Although special attention was not given to the collecting of Crustacea by the 1921 Expedition, some species of very considerable value were obtained. Representatives of two species were found which were first detected as being new in the course of working up the material collected by the "Albatross" Expedition of 1911. Descriptions of these will appear in a forth-coming Bulletin of the American Museum of Natural History. They are numbers 18 and 19 of the present list.

In addition to the collection from the Gulf of California the following list includes one species (No. 6) taken on Guadalupe Island, off the west coast of Lower California by Dr. G. Dallas Hanna in 1922, and one species (No. 12) from a freshwater stream in the Sierra Laguna Mountains of Lower California, collected in 1919 by Mr. Joseph R. Slevin.

¹No. 36 of the Gulf Expedition papers.

²A map showing all the islands, etc., visited by this Expedition will be found in Vol. XII, No. 6, of these Proceedings, copies of which can be supplied for 50 cents.

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1. *Cænobita compressus* Guérin

Cænobita compressa GUÉRIN, Voy. autour du Monde sur la *Coquille* par Duperrey, Zool., Vol. 2, pt. 2, 1831, p. 29.

Punta Gordas, Ceralbo Island, July 6, 1921; one specimen; Fred Baker, coll.

Monserrate Island, May 25, 1921; one female; V. Owen, coll.

2. *Clibanarius digueti* Bouvier

Clibanarius digueti BOUVIER, Bull. Mus. Hist. Nat. Paris, Vol. 4, 1898, p. 378.

San Carlos Bay, Sonora, 1921; 32 specimens; Fred Baker, coll.

3. *Clibanarius panamensis* Stimpson

Clibanarius panamensis STIMPSON, Ann. Lyc. Nat. Hist. N. Y., Vol. 7, 1859, p. 84.

Puerto Escondido, May 24, 1921; two males; Fred Baker, coll.

4. *Dardanus sinistripes* (Stimpson)

Pagurus sinistripes STIMPSON, Ann. Lyc. Nat. Hist. N. Y., Vol. 7, 1859, p. 82.

Salt Works, San Jose Island, June 20, 1921, 2 fathoms; two males; Ivan Johnston and Joseph Chamberlain, colls.

5. *Pagurus benedicti* Bouvier

Eupagurus minutus BENEDICT, Proc. U. S. Nat. Mus., Vol. 15, 1892, p. 14 (not *Paguru minutus* Hess, 1887).

Eupagurus benedicti BOUVIER, Bull. Mus. Hist. Nat. Paris, Vol. 4, 1898, p. 381.

Salt Works, San Jose Island, June 10, 1921, 2 fathoms; one male; Ivan Johnston and Joseph Chamberlain, colls.

6. *Pagurus samuelis* (Stimpson)

Eupagurus samuelis STIMPSON, Proc. Boston Soc. Nat. Hist., Vol. 6, 1857, p. 86.

Pagurus samuelis SCHMITT, Univ. Calif. Pub. Zool., Vol. 23, 1921, p. 139, pl. 16, figs. 2 and 3, text fig. 90a, b.

Guadalupe Island; one male; G. D. Hanna, coll.

This is the first record of this species south of San Diego.

7. *Petrolisthes gracilis* Stimpson

Petrolisthes gracilis STIMPSON, Ann. Lyc. Nat. Hist. N. Y., Vol. 7, 1859, p. 74.—SCHMITT, Univ. Calif. Pub. Zool., Vol. 23, 1921, p. 181, pl. 32, fig. 4.

Tepoca Bay, April 25, 1921; one male and one female; Fred Baker, coll.

San Carlos Bay, Sonora, July 9, 1921; three specimens; Fred Baker, coll.

In general this species is not unlike *P. eriomerus* Stimpson⁸ which also is listed from Lower California; but aside from the fact that the merus of the ambulatory legs is almost, if not wholly nude, and that the carpus of the chelipeds is smoother and more elongate, the greater extent of the hairiness on the inner side of the movable finger of the chelipeds will invariably distinguish the two forms. In *P. gracilis*, the under side of the movable finger is clothed with long hair nearly to the tip; in *P. eriomerus*, on the movable finger it appears to be confined to the proximal half of the finger, the distal moiety if at all pubescent is devoid of long hair, being usually quite naked and more or less evenly rounded off beneath.

8. *Petrolisthes hirtipes* Lockington

Petrolisthes hirtipes LOCKINGTON, Ann. Mag. Nat. Hist. (5), Vol. 2, 1878, p. 397.

Tepoca Bay, April 25, 1921; one female; Fred Baker, coll.

This is a much flattened species, unmistakably characterized by Lockington, and, until the present, not since recorded from

⁸Ann. Lyc. Nat. Hist. N. Y., Vol. 10, 1871, p. 119.

the Gulf of California. Lockington's "several specimens" were "dredged in five fathoms Mulegé Bay, Gulf of California; also at Port Escondido."

9. *Petrolisthes hirtispinosus* ? Lockington

Petrolisthes hirtispinosus LOCKINGTON, Ann. Mag. Nat. Hist. (5), Vol. 2, 1878, p. 400, (not *Petrolisthes edwardsi* Saussure).

Tepoca Bay, April 25, 1921; one male and two females; Fred Baker, coll.

As Lockington surmised his *P. hirtipes* is undoubtedly distinct from *P. edwardsi*. In the latter the inner margin of the carpus of the chelipeds carries but three teeth; in *P. hirtispinosus*, the carpus is armed "with four or five large triangular teeth in front, ending in spines followed by more spinose tubercles at the distal end."

The specimens from Tepoca Bay are very near, if not identical with, the species described by Lockington. Except for the fact that he states, "surface of chelipeds covered with squamose ridges with a crenulate edge, and thickly pubescent," the specimens from Tepoca Bay fit his description very closely. When the pubescence is rubbed off, such ridges are found to occur only on the outer, rather posterior half of the carpus and on the "large triangular teeth" on its anterior margin. The general surface of the hand shows no such ridges, being covered with small imbricating scales with seemingly crenulate edges, due to the insertion of the stiff hairs with which the free border of each little scale is margined. Occasional scales are somewhat raised up, virtually forming small tubercles, which, under ordinary conditions, are hidden by the pubescence of the hand.

From the presence of the squamose ridges on the carpus and the fact that in addition to "the longitudinal ridge on the carpus . . . formed of prominent oblique squamæ," the "manus" has a similar longitudinal line passing into a line of tubercles down the center of the dactylus, but formed, however "of a row of longitudinal crenulate squamose teeth," it is probable that Lockington assumed that squamose ridges were

also present on the palm beneath the pubescence covering its upper surface. The only ridges on the hands other than the row of longitudinal teeth just mentioned, are those running up from beneath across the hinder border of either palm to form the raised "interior margins."

10. *Pachycheles panamensis* ? Faxon

Pachycheles panamensis FAXON, Bull. Mus. Comp. Zoöl., Vol. 24, 1893, p. 175; Mem. Mus. Comp. Zoöl., Vol. 18, 1895, p. 71, pl. 15, fig. 2, 2a.

Tepoca Bay, April 25, 1921; two males and two females; Fred Baker, coll.

These specimens differ slightly from the published description and figure of the species given by Faxon. The hands are more hairy than the description or figure appear to admit. The internal distal angle of the merus of the smaller cheliped is produced as a feebly denticulated tooth, the same angle of the merus of the larger cheliped forming a blunter lobe, a condition of affairs just the reverse of that described and figured by Faxon. The tothing of the carpus is as described; the figure of *P. panamensis*, however, is not wholly in agreement with the description.

From Holmes's *P. pubescens* this Tepoca Bay material differs in that the pubescence is made up more largely of longer hairs, and, though thick, is not so brushy or felted as the generally shorter pubescence of that species. Also the larger hand is proportionately longer in *P. panamensis*? than in *P. pubescens*; in the latter the movable finger is shorter than the greatest width of the hand, while in the former the movable finger of the larger hand is longer than the greatest width of the hand. Beneath the pubescence the hands of *P. panamensis*? are less coarsely and not so prominently granulate as in *P. pubescens*. The fingers are gaping and lack the tuft, or dense brushy growth of hair found between the fingers of *P. pubescens*. Like that species the telson is composed of seven plates: a central (triangular), two terminal, and two lateral, each of which has a smaller plate separated off at its proximal end.

11. *Macrobrachium mexicanum* (Saussure)

Palæmon mexicanus SAUSSURE, Mem. Soc. Phys. Hist. Nat. Genève, Vol. 14, 1858, p. 468 (52), pl. 4, fig. 27, 27a.

Mulegé, May 14, 1921; 19 specimens from fresh water above tide level, upper part of town; Joseph Chamberlain, Ivan Johnston, and Fred Baker, colls.

It seems to me that this is very likely the species reported from this locality by Bouvier as *Palæmon forceps* M. Edw. Bouvier⁴ also described a new species, *Macrobrachium (Palæmon) digueti*, at the same time⁵, but so far as I am aware the latter species has not been taken since, nor do specimens of it exist in any American collection.

12. *Macrobrachium jamaicense* (Herbst)

Cancer (Astacus) jamaicense HERBST, Natur. Krabben u. Krebse, Vol. 2, 1792, p. 57, pl. 27, fig. 2.

Guamuchi Ranch, Sierra Laguna Mountains, Cape Region, fresh water; five males; Joseph R. Slevin, coll.

13. *Palæmon ritteri* Holmes

Palæmon ritteri HOLMES, Proc. Cal. Acad. Sci. (2), Vol. 4, 1895, p. 579, pl. 21, figs. 29-35.

Ballandra Bay, Carmen Island, May 22, 1921, 8 fathoms; one specimen; Fred Baker, coll.

14. *Periclimenes tenuipes* (Holmes)

Anchista tenuipes HOLMES, Occas. Papers Cal. Acad. Sci., Vol. 7, 1900, p. 216.

Patos Island, anchorage, April 23, 1921, 4½ fathoms; seven specimens; Fred Baker, coll.

⁴ Bull. Mus. Hist. Nat. Paris, Vol. 1, 1895, p. 160.

⁵ Op. cit. p. 159, text fig. 1, 2.

Just as the several Gulf of California specimens examined by Miss Rathbun⁶ "agree with Holmes's description, except that the fingers of the second pair of feet are only a little over half as long as the palm and the posterolateral angle of the sixth abdominal segment is subacute" so do these specimens from Patos Island.

15. *Hippolyte californiensis* Holmes

Hippolyte californiensis HOLMES, Proc. Cal. Acad. Sci. (2), Vol. 4, 1895, p. 576, figs. 21-26.

Patos Island, anchorage, April 23, 1921, 4½ fathoms; two specimens; Fred Baker, coll.

16. *Betæus longidactylus* Lockington

Betæus longidactylus LOCKINGTON, Proc. Cal. Acad. Sci., Vol. 7, 1877, p. 35.

Tepoca Bay, April 25, 1921; one male and one ovig. female; Fred Baker, coll.

This is the first record of the occurrence of this species south of San Diego, its type locality.

17. *Sicyonia penicillata* Lockington

Sicyonia penicillata LOCKINGTON, Bull. Essex Inst., Vol. 10, 1878 (1879), p. 164.

Ballandra Bay, Carmen Island, May 22, 1921, 8 fathoms; three specimens; Fred Baker, coll.

18. *Sicyonia*, species

Ballandra Bay, Carmen Island, May 22, 1921, 8 fathoms; one female; Fred Baker, coll.

⁶ *Harriman Alaska Expedition*, Vol. 10, 1904, p. 34, fig. 12.

19. *Penæopsis*, species

Patos Island, anchorage, April 23, 1921; one female; Fred Baker, coll.

This and the preceding species were first taken by the "*Albatross*" and are being described in a forthcoming paper of the Albatross 1911 Expedition to Lower California.